

WM141-18 Discrete Structures for Cyber Security

20/21

Department

WMG

Level

Undergraduate Level 1

Module leader

Magda Zajackowska

Credit value

18

Module duration

30 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Discrete structures are the foundation of digital computing. Although relatively few people work primarily on discrete structures, almost all cyber security professionals work with the techniques and concepts covered in this module to provide a foundation for their own specialist areas.

Material from Discrete Structures for Cyber Security will give greater insight into the reasoning behind much of the more applied cyber security material throughout the programme.

Module aims

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Outline content

The content of this module will be taught from a cyber security perspective.

- Sets
- Relations
- Functions
- Logic
- Proofs
- Graphs
- Discrete probability

Learning outcomes

By the end of the module, students should be able to:

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

Indicative reading list

Johnsonbaugh Richard, "Discrete mathematics", 8 Ed, Pearson Education Limited (2019)

Balakrishnan, V. K., "Schaum's Outline of Combinatorics", McGraw-Hill (1995)

Karumanchi, Narasimha, "Data Structures and Algorithms Made Easy: Data Structure and Algorithmic Puzzles", 2 Ed, CareerMonk (2011)

Subject specific skills

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

Transferable skills

problem solving

Study

Study time

Type	Required
Supervised practical classes	18 sessions of 3 hours (30%)
Total	180 hours

Type	Required
Private study	41 hours (23%)
Assessment	85 hours (47%)
Total	180 hours

Private study description

Independent activity between workshops.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D2

	Weighting	Study time
Coursework	30%	25 hours
The precise composition of the coursework may vary from year to year. It may include two or more sub-components. Where there are two or more sub-components, the weighting of each sub-component towards the overall module grade will be published near the beginning of the module.		
Online Examination	70%	60 hours
Written Examination		

- Answerbook Pink (12 page)

Assessment group R

	Weighting	Study time
Written examination	100%	

Feedback on assessment

Written feedback for each assignment
 Verbal feedback during tutorial sessions
 Solutions provided to selected tutorial questions
 Summative feedback on assignments and exam

Availability

Courses

This module is Core for:

- UWMA-H651 Undergraduate Cyber Security
 - Year 1 of H651 Cyber Security
 - Year 1 of H651 Cyber Security
 - Year 1 of H651 Cyber Security